Norman H. Bangerter
Governor
Dee C. Hansen
Executive Director
Dianne R. Nielson, Ph.D.
Division Director

State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
801-538-5340

August 14, 1989

TO: File

FROM: D. Wayne Hedberg, Reclamation Hydrologist

RE: Field Inspection, Redmond Salt & Clay Company, M/039/002, RCS South Salt Mine, RCS Bentonite Mine and RCS North Salt Mine, San Pete and Sevier Counties, Utah,

On July 17, 1989, Holland Shepherd and Wayne Hedberg visited the salt and clay mine sites which are owned and operated by Redmond Salt & Clay Company. The purpose of the field visit was to ascertain the amount of onsite surface disturbance associated with these mining operations.

We visited the South Salt Mine first and toured the surface facilities associated with the underground mining operation with Mr. Jay Bosshardt. Surface disturbance at this mine site, was visually estimated at between 8 to 10 acres, which included the mill site. The mill site consists of the primary and secondary crushers, screening and drying facilities plus a maintenance shop. The operator plans to construct a new warehouse adjacent to the maintenance shop within the near future.

Current mining operations at the South Salt Mine are being conducted underground through a series of three tunnels which are mined into the salt deposit out of an open strip pit. The operator was in the process of developing a new tunnel entrance, at the time of our field visit. The tunnels currently existing at the base of the pit were estimated at between 50 - 75 feet in height and 20 - 30 feet in width. Room and pillar mining methods are being used underground and the salt deposit is being mined in a north-south direction, at the present time.

According to Mr. Bosshardt, the salt bed is located at a depth of 20 - 30 feet below the land surface in the immediate vicinity of the mine. Overburden thickness increases as one progresses to the east or to the west. Mr. Bosshardt described the salt deposit as being comprised of nearly vertical beds or veins with a hard clay layer immediately overlying the salt deposit and a unconsolidated gravely deposit overlying the hard clay layer. Mr. Bosshardt stated that the estimated salt deposit thickness was 1,000 feet deep. They have not progressed in the east - west direction underground for more than 100 - 300 yards laterally; most of the mining has been conducted in a north - south direction at the present date.

Historically, this area was first mined for salt approximately 75 years ago. The Bosshardt family purchased the mine around 1960 and has been operating it ever since that time.

A number of sink holes were noted to have developed immediately to the west of the current open strip pit. Mr. Bosshardt indicated that these sink holes have been expanding for a series of years, and contributes their development primarily to a breach in a state irrigation canal, located approximately 1 - 1 1/2 miles to the west of the mine site. This breach which occurred in the late 1970's allowed a significant amount of water to flood a portion of the mine site creating a surface impoundment situation for approximately 30 days. This flooding initially caused significant problems in keeping the mine dewatered. It also lead to the ultimate dissolutionment of the salt deposit immediately adjacent to the mine site. The ponded water apparently infiltrated through cracks and fractures in the surface down to the salt level, dissolving the salt and allowing the sink holes to develop through subsidence to the surface.

The mine is dewatered intermittently through a 4" water line. The brine water is discharged automatically and is routed to an evaporation pond, located several hundred yards to the north of the active mining operation. Apparently, the ongoing sub-surface drainage resulting from seepage/leakage from the distant main irrigation canal to the west of the mine site, is also part of the problem associated with the local development of the sink holes. The operator has installed a sub-surface drainage system and pump to intercept sub-surface drainage before it reaches the underground mining operation. The sub-surface drainage intercepting system is buried approximately 150 - 200 yards west of the South Salt Mine, at a depth of between 25 - 30 feet deep. Mr. Bosshardt indicated that it has limited effectiveness in intercepting all of the water that is still entering the mine.

The second mine site visited was a Bentonite mining operation. It consists of a series of open stripped areas and a processing/milling facility located on approximately 5 - 6 acres of disturbance. It is situated approximately 1/2 mile to the north of the South Salt Mine.

Surface mining has been the predominant mining method used to extract the bentonite from exposed outcrops on the adjacent hillsides. Clay has also been removed from lower depressions in the small ephemeral drainages located adjacent to the mill site. There are a number of smaller 1 - 2 acre clay excavations which are not directly associated with the primary bentonite clay mining area and adjacent milling facilities. A series of access/haul roads have also been constructed which inter-connect the three primary mining properties.

The third mine site visited was the North Salt Mine which is located approximately 1/4 - 1/2 mile north of the Bentonite Mine and Mill site. This area is also an open strip pit. The underground room and pillar mining operation was inactive at the time of our field visit. Mr. Bosshardt indicated that the mine has not been operated this spring or summer, but that they probably would be utilizing this site before the end of the year.

This mine site has an old milling facility located within the disturbed area which has been abandoned (temporarily). All useful structures have been removed from the mill site. The remnants are predominantly comprised of deteriorating wood structures and rusting steel and scrap metal of little, if any, salvage value.

Mine water is also intermittently being discharged from this mine into a series of two evaporation ponds located immediately to the east of the pit area. There are currently two tunnels excavated within the open pit at this mine site. The tunnel entrances are approximately 20 feet high by 15 feet wide in dimension. An area of salty ponded water, not associated with the mine water discharge point, is located immediately adjacent and west of the underground mine entrances. Mr. Bosshardt indicated that this impounded water was a permanent water source which does not dry up during the summer months. It was not readily discerned where this water might be originating from or whether it could be reflecting the local ground water table level.

Following our site inspection, we returned to the main warehouse area in Redmond and briefly discussed permitting requirements with the operator. We discussed the reclamation responsibilities as well as the bonding requirements that would need to be resolved as part of the approval of a new permit application for this large mining operation. We informed the operator that the Division would draft a letter outlining the results of our field inspection and also make recommendations on the informational requirements needed as part of the filing of a Notice of Intention to Commence Large Mining Operations.

jb
cc: Jay Bosshardt, Redmond Salt & Clay
Lowell Braxton
Scott Johnson
Holland Shepherd
MN2/37-39